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Published in:
Journal of Occupational Rehabilitation

DOI:
10.1007/s10926-012-9389-6

Publication date:
2013

J Occup Rehabil (2013) 23:290–299
DOI 10.1007/s10926-012-9389-6

Return to Work Perceptions and Actual Return to Work in Workers with Common Mental Disorders

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Published online: 3 November 2012

Abstract *Introduction*: Return to work (RTW) perceptions have been found to predict actual RTW of workers with common mental disorders. This study aims to (1) assess the relative value of RTW self-efficacy (RTW-SE) and RTW expectation in predicting actual RTW and (2) explore the role of mental health symptoms, work characteristics and their interaction as determinants of these RTW perceptions at baseline and over time. *Methods*: Workers (N = 179) with common mental disorders were included at the start of their sick leave and followed-up at 3, 6, 9, and 12 months. RTW self-efficacy, RTW expectation, mental health and RTW were assessed by self-report. Kaplan–Meier survival analysis was used to test the predictive value of RTW-SE and RTW expectation against the actual RTW. Linear regression was used to study the associations of mental health symptoms, work characteristics and their interaction with RTW-SE at baseline. Mental health symptoms in relation to RTW-SE over the first 6 months were analyzed using Linear Mixed Models. *Results*: Compared to RTW expectation, differences in RTW-SE were more predictive of actual RTW. At baseline, lower fatigue, depressive symptoms, and work pace- and load were associated with higher RTW-SE. Decreasing levels of fatigue and depressive symptoms over time were associated with parallel improvements in RTW-SE. Workers with high work pace and workload at baseline showed lower levels of RTW-SE at all time points. *Conclusions*: We recommend the use of the RTW-SE scale to detect workers with common mental disorders at risk of a late RTW. Work characteristics and changes in mental health symptoms were associated with RTW-SE over time.

Keywords Self-efficacy · Return to work expectation · Mental health · Absenteeism · Occupational health

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Introduction

Common mental disorders are highly prevalent in the working population. These disorders are often associated with productivity losses while at work and absenteeism from work [1–4]. Return to work is an important goal for workers who are absent from work and want to avoid negative consequences, such as prolonged work disability and loss of earnings. However, returning to work after an absence due to a common mental disorder entails dealing with many barriers [5]. Workers reported having to overcome health-related barriers, such as exhaustion and reduced concentration, and personal barriers, such as perfectionism. Moreover, a lack of social support form colleagues or supervisor can impede the re-integration at the workplace.

Over the last 10 years, factors predictive of return to work in workers with common mental disorders have been identified. It was found that besides health-related factors (such as the severity of the mental disorder) and

work-related factors (such as supervisory support or the quality of occupational healthcare), personal factors were also predictive of return to work [6]. One of those personal factors is the worker's expectancy of the outcome of the return to work process [7]. RTW expectation, sometimes called recovery expectation, has been the subject of many return to work studies in various populations of workers [8–10]. A few studies have looked at workers with common mental disorders and found that RTW expectation was a predictor of future return to work [7, 8, 11].

A personal factor that is closely related to RTW expectation is self-efficacy. Self-efficacy is a concept derived from Bandura's theory and represents an individual's belief of his or her ability to successfully perform a specific behavior [12]. Numerous studies have shown that persons with high self-efficacy towards a behavior will more often initiate that behavior and also have a higher chance of persevering in that behavior (see Williams [13] for an overview). The concept of self-efficacy has also been applied in return to work studies. Self-efficacy to return to work (RTW-SE) has been defined as the belief that workers have in their ability to meet the demands of their job should they return to work [14]. RTW-SE was also found to be predictive of actual return to work in studies of workers with common mental disorder [7, 14, 15].

Authors have pointed to RTW perceptions, both RTW expectation and RTW-SE, as a potential focus for interventions [7, 15, 16]. However, several questions about RTW perceptions need to be answered to guide the development of interventions in workers with common mental disorders. First, the relative values of RTW-SE and RTW expectation in predicting actual return to work needs to be established. RTW expectation can relatively easy be assessed with a single question [7, 17], which can be attractive for use in practice. In contrast, RTW-SE in workers with common mental disorders is a construct that has been assessed with an 11-item questionnaire [14]. The predictive value of both types of RTW perceptions is relevant information for professionals aiming to use RTW perceptions as a means to identify workers at risk of prolonged disability.

Second, the determinants of negative RTW perceptions should be unraveled to guide the focus of the interventions. Two opposing explanations of the role of negative RTW perceptions can be formulated. Negative RTW perceptions can either be a determinant of return to work, independent of the real conditions, or they can merely reflect an accurate assessment by the workers of a difficult, complex situation. In the first line of reasoning, a low RTW-SE or negative RTW expectancy reflects overly negative perceptions that unnecessarily hamper return to work. In cognitive-behavioral interventions, overly negative perceptions are considered irrational and can be modified with specific techniques.

The second hypothesis is that negative RTW perceptions reflect an accurate evaluation of a complex set of clinical, work and contextual factors by the worker. Previous studies [7, 14, 15] have shown that the severity of mental health symptoms at baseline did not attenuate the relationship between RTW perceptions and actual return to work. These findings in previous studies point to negative RTW perceptions as being irrational perceptions. However, apart from symptom severity at baseline, other clinical, work, or contextual factors may explain the relationship of these concepts to an actual return to work. In the case of this second hypothesis, low RTW-SE or RTW expectation reflects a rational perception and should be treated as a red flag rather than a modifiable determinant of RTW.

To progress toward developing interventions, this study focuses on gaining more knowledge on the determinants of RTW perceptions. The role of the working environment and its interaction with mental health symptoms may be a good starting point for such study. For workers with common mental disorders, the perception of being able to meet work demands is, by its nature, an interaction between perceptions of mental health symptoms, working environment and possibly other contextual factors. Flach and colleagues recently found that in addition to medical diagnosis, unfavorable work characteristics are associated with a longer sick leave duration in workers with common mental disorders [18]. To our knowledge, however, the role of work characteristics in the development of RTW-SE has not yet been explored in this worker population. A second focus of this study is therefore how symptom levels over time and work characteristics relate to RTW perceptions over time. This may help unravel the role of changes in symptom levels usually occurring during the recovery and RTW process in relation to RTW perceptions.

RTW-SE, perceived work characteristics and mental health symptoms were assessed as part of the baseline measurement in a cluster randomized controlled trial of two types of counseling of workers absent from work due to CMDs by occupational physicians. This study aimed to first assess the relative value of RTW-SE and RTW expectation, as two different types of RTW perceptions, in predicting the time to an actual RTW. Second, the RTW perception with the highest predictive value was selected for further analyses. These analyses include the following: (1) exploring the role of mental health symptoms, work characteristics and their interaction as determinants of RTW perceptions at baseline and (2) exploring the association of changes in mental health symptoms with changes in RTW perceptions over time, including the interaction with work characteristics. We hypothesized that improvement in mental health was associated with increasingly positive RTW perceptions over time. We further

hypothesized that improvements in mental health would be associated with a lower increase of positive RTW perceptions in workers with unfavorable work characteristics, as opposed to workers with favorable work characteristics.

Methods

Design and Procedure

Data collected in a cluster randomized study on the effectiveness of an exposure-based return to work intervention for workers with common mental disorders, provided by occupational physicians, were used for this study [19]. Workers were included at the start of their sick leave, and follow-up measurements were conducted at 3, 6, 9, and 12 months after the first day of sick leave. The intervention was not effective and even showed a prolonging effect on the time to full return to work [20]. Therefore, the data of the two treatment groups are combined, but the influence of being either part of the intervention or the control group was tested in the longitudinal analyses [21]. Between November 2006 and December 2007, workers on sick leave due to common mental disorders were recruited by their occupational physicians. After providing informed consent, workers participated in a telephone diagnostic interview conducted by the researchers. All questionnaires were sent by mail.

Population

Participants were included in the study if they met the following criteria: being on sick leave due to a common mental disorder for between two and 8 weeks. Common mental disorders were defined as stress-related, adjustment, anxiety, or depressive disorders. Workers on sick leave due to another psychiatric disorder or primarily due to a somatic condition were excluded from participation. A total of 160 workers, 75 in the experimental and 85 in the care as usual group, were included. For the present study, only data of the first 6 months of follow-up were used as this was the period in which the majority of participants had not yet returned to work.

Measures

Worker Characteristics

The following personal characteristics of the workers were examined for this study: age, gender, civil status (married or living together; single; widowed or divorced), and educational level (low; middle; or high).

Diagnosis

In accordance with the evidence-based practice guidelines for Dutch occupational physicians, stress-related disorders were defined as having mental health symptoms but not fulfilling the criteria of a mental disorder according to the Diagnostic Statistical Manual (DSM-IV) [22] and established by the Mini-International Neuropsychiatric Interview (MINI plus; Dutch version 5.0.0.) [23]. Anxiety disorder was defined as suffering from one of the following: panic disorder, agoraphobia, social phobia, simple phobia, obsessive–compulsive disorder, generalized anxiety disorder or hypochondria. Depressive disorder was defined as suffering from either a major depressive disorder or dysthymia. The psychometric properties of the MINI can be considered as good [24].

Fatigue

We measured fatigue at each time point by using the 20-item multi-dimensional Checklist Individual Strength Questionnaire (CIS). The subjective feeling of fatigue subscale was used because it reflects severity of fatigue [25]. Each item was scored for the previous 2 weeks on a 7-point Likert scale ranging from 1 (true) to 7 (not true). The CIS is able to measure changes in fatigue scores in groups as well as in individual workers in a randomized controlled trial [26]. Furthermore, the discriminant validity of the CIS is adequate for employees in various occupational groups [27]. The internal consistency of the CIS is also good for clinical and working populations, and the Cronbach's alpha for the subjective subscale has been found to be 0.88 [25]. Possible total scale scores range from 8 to 56, with higher scale scores reflecting higher fatigue levels.

Distress

We measured distress at each time point with a subscale of the Four-Dimensional Symptom Questionnaire (4DSQ), a Dutch self-report questionnaire. The distress subscale contains 16 items and the total score ranges from 0 to 32. Higher scale scores indicate more distress. The 4DSQ appears to be a valid and reliable self-report questionnaire for primary health care patients. The range of Cronbach's alpha for the 4 subscales has been shown to be from 0.84 to 0.90 [28].

Depressive and Anxiety Symptoms

Depressive and anxiety symptoms were measured at each time point by subscales of the Hospital Anxiety and Depression Scale (HADS). This instrument is a 14-item

self-report screening scale. It contains two 7-item subscales, one for anxiety, and one for depression. Both subscale scores range from 0 to 21, with higher scale scores indicating more depression or anxiety. The HADS shows good homogeneity and reliability, with Cronbach's alpha for the anxiety and depression subscales ranging from 0.81 to 0.84 and from 0.79 to 0.86, respectively, in different Dutch samples [29].

Self-Efficacy for Return to Work (RTW-SE)

We measured 'self-efficacy for return to work' by the 11-item return to work self-efficacy scale at each time point [14]. Participants are asked to respond to statements about their jobs, imagining that they would start working their full contract hours again tomorrow (in their present emotional state/state of mind). Three example items include: ''If I resumed my work fully tomorrow I expect that'': (1) "I will be able to perform my tasks at work'', (2) "I will be able to cope with work pressure", and (3) "I will be able to cope with setbacks". This questionnaire was examined by Lagerveld et al. [14], who found in a pilot study of workers on sick leave due to CMDs that it had a satisfactory construct validity and good reliability. The Cronbach's alpha has been found to range from 0.90 to 0.96 across samples, and the test–retest-reliability was 0.73. The construct validity has been established as the patterns of relationships between the scale and related constructs that meet the theoretical expectations. Moreover, the scale has been found to predict actual return to work over time [14]. The instrument includes one scale, with possible scores range from 1 to 6. Higher scores reflect higher self-efficacy levels.

RTW Expectation

RTW expectation was measured at each time point with a single question: "How long will it take you to fully return to work?" Participants were asked to respond on a 5-point scale: (1) less than 1 month; (2) 1 month or more but less than 3 months; (3) 3 months or more but less than 6 months; (4) 6 months or more but less than 12 months; (5) 12 months or more.

Time to Full Return to Work

The date of return to work was assessed by the self-report questionnaires, workers' diaries and medical records of the occupational physicians. The time until full return to work was defined as the number of calendar days between the first day of sick leave and the first day of full return to work. Full return to work was defined as working the total amount of contracted working hours per week for at least 28 calendar days without a relapse.

Work Characteristics

Of the job characteristics measured, profession, industry, contract hours, and type of contract were selected for descriptive purposes only. The potential explanatory work characteristics were assessed at baseline using 7 of 14 scales of the VBBA-core-questionnaire (in Dutch: Vragenlijst beleving en beoordeling van de arbeid), a self-report questionnaire on the experience and evaluation of work. Cronbach's alpha values for the subscales used in this study ranged from 0.79 to 0.95 [30]: work pace and workload (11 items; 0.89), emotional strain (7 items; 0.85), decision latitude (8 items; 0.85), autonomy (11 items; 0.90), social support from colleagues (11 items; 0.87) and social support from the manager (11 items; 0.90), and job insecurity (4 items; 0.95). The construct and concurrent validity of the VBBA-core-questionnaire seems to be satisfactory [30]. All subscales are transformed to the same range with a minimum score of 0 and a maximum score of 100, with higher scale scores indicating unfavorable working characteristics.

Analysis

RTW-SE and RTW Expectation in Predicting Time to Actual RTW

Kaplan–Meier survival curves were calculated separately to assess the predictive value of RTW-SE and of RTW expectation for actual return to work times. Both factors were dichotomized into positive and negative RTW perceptions. RTW-SE was dichotomized based on the median (<3 vs. ≥ 3). Positive RTW expectation was defined as expecting to fully return to work within 3 months, based on a previous study [7].

Cross-Sectionally Exploring Determinants of RTW Perceptions

Linear regression was used to study the associations of potential explanatory variables with RTW-SE. Potential explanatory variables included mental health symptoms and work characteristics. In the univariate analyses, all potential explanatory factors that were statistically significant at the $P < 0.20$ level were first selected for the multivariate analyses. For all multivariate analyses, $P < 0.05$ was used as the threshold for statistical significance.

To explore the role of mental health symptoms, work characteristics and their interaction as determinants of RTW perceptions at baseline, three models were subsequently tested. The first model used the selected mental health symptoms, and the second model used mental health

symptoms and work characteristics. The potential explanatory variables not selected in the univariate analyses were added to this model, one by one, to check whether they would show a relationship ($P < 0.20$) with RTW-SE in the presence of other variables in the model. If they did show a relationship, they were added to the model. The third model included the interaction terms of mental health and work characteristics that were individually found to be significant on a $P < 0.05$ level in the second model.

The potential confounding effects of education level and gender were tested because these variables were predictive of positive return to work expectations in one of the few studies on the determinants of return to work expectations, in this case of whiplash-associated disorders [31]. Moreover, these variables are unlikely to be an intermediate step in a causal pathway or to be affected by the explanatory variables. Education and gender were included as control variables in all three multivariate models if they were found to be related to both RTW-SE and any of the explanatory variables in the model.

Exploring Determinants of RTW Perceptions Over Time

In the longitudinal models, the association of changes in mental health symptoms over time with changes in RTW perceptions over time was explored. For this analysis, the mental health symptoms that had explanatory power in the cross-sectional analyses were selected. A Linear Mixed Models (LMM) analysis was conducted, with RTW perceptions over time as the dependent variable and mental health over time as a fixed independent factor.

First, a model with two levels of random effects was tested. The random effects of workers within occupational physicians was used to account for the multi-level effect that may be existent in the data because the occupational physicians were randomized in our cluster-randomized design. The random effect of measurements within workers was used to account for the longitudinal structure of the data (multiple measurements over time within one worker). The random effect of patients within occupational physicians was zero; as a result, a model was fitted with only measurements within workers as a random effect. The model was fitted using the restricted maximum likelihood function (REML). For the estimation of the random effects, variance components (VC) were selected as the covariance type. Time was coded as "1" for baseline scores, "2" for 3 months follow-up, and "3" for 6 months follow-up from baseline.

Second, because the data were collected as part of a cluster-randomized trial, participation in these interventions may have influenced RTW perceptions over time. Therefore, to test for the effect of treatment condition on RTW perceptions, time, treatment condition, and the "time × treatment condition" interaction were entered in the model as fixed effects. However because these interaction terms were non-significant, the final models did not include this interaction term.

Third, to explore the role of work characteristics in moderating the association of mental health and RTW perceptions over time, a model was fitted with RTW perceptions over time as the dependent variable and both mental health over time and the interaction of time x work characteristics included as fixed effects.

Lastly, a sensitivity analysis of the final model was conducted by including only RTW-SE data of time points where a full RTW had not yet occurred.

All analyses were performed using SPSS, version 16.0.1.

Results

The characteristics of the 179 participants are presented in Table 1.

RTW Self-Efficacy (RTW-SE) and RTW Expectation in Predicting Time to Actual RTW

Negative RTW-SE was found in 69 (48 %), and positive RTW-SE was found in 76 (52 %) of the participants. Participants with a positive RTW-SE had a median time to return to work of 119 days (CI 82–156); workers with a negative RTW-SE had a median time of return to work of 221 days (CI 186–256). The log rank test showed a statistically significant difference between the two groups, with positive RTW-SE being associated with a shorter time until return to work ($Chi^2 = 17.8$ (df = 1), $P < 0.000$). Figure 1 presents the Kaplan–Meier survival curve of positive vs. negative RTW-SE.

RTW expectation was positive in 105 (75 %) and negative in 37 (25 %) of the participants. Median time to return to work for workers with a positive RTW expectation was 168 days (CI 150–186), compared to 209 days (CI 161–256) for workers with more negative expectations. The log rank test did not show a statistically significant difference between the two groups. A post hoc analysis showed that when RTW expectation was divided into positive or negative groups based on the median, the distribution between the groups did not change. We found that 11 % of the respondents estimated their RTW within 1 month, and 53 % estimated their RTW from 1 to 3 months. This result means that the division based on the median was the same as the original division based on the less or more than 3 months criterion.

RTW-SE was selected for further analyses, based on the performance in predicting actual RTW,

Table 1 Baseline characteristics of participants, n ranges from 150 to 179 due to missing values

Characteristic	
Gender, male, N (%)	51 (29)
Age in years, mean (SD)	45 (10)
Civil status	
Married or living together	114 (72)
Single	26 (17)
Widowed or divorced	17 (11)
Educational level	
Low, N (%)	22 (14)
Middle, N (%)	37 (24)
High, N (%)	96 (62)
Contract hours per week, mean (SD)	32 (7)
Type of contract	
Permanent, N (%)	143 (91)
Fixed, $\leq$ 1 year, N (%)	9 (6)
Fixed, $>$ 1 year, N (%)	5 (3)
Diagnosis, type of common mental disorder	
Stress related disorder, N (%)	36 (23)
Depressive disorder, N (%)	37 (24)
Anxiety disorder, N (%)	37 (24)
Mixed Anxiety and depressive disorder, N (%)	47 (30)
Fatigue, mean (SD)	41.2 (11.1)
Distress, mean (SD)	18.0 (7.7)
Depressive symptoms, mean (SD)	9.9 (4.3)
Anxiety symptoms, mean (SD)	8.9 (3.6)
Work pace and workload, mean (SD)	56.9 (15.7)
Emotional strain, mean (SD)	37.7 (16.9)
Decision latitude, mean (SD)	56.7 (19.6)
Autonomy, mean (SD)	47.1(18.5)
Social support colleagues, mean (SD)	26.7 (13.8)
Social support manager, mean (SD)	32.1 (19.9)
Job insecurity, mean (SD)	24.4 (28.4)
RTW Self-efficacy[a], mean (SD)	3.2 (1.2)
RTW Outcome expectancy	
Expected RTW $<$ 3 months	113 (75)
Expected RTW $\geq$ 3 months	37 (25)
Actual RTW after 3 months, N (%)	33 (20 %)
Actual RTW after 6 months, N (%)	57 (35 %)
Days until actual return to work, median (IQR)	169 (97–242)

[a] Higher scores reflect more positive perceptions

Exploring Determinants of RTW-SE at Baseline

In Table 2, the results of the univariate linear regression analyses with RTW-SE as the dependent variable are presented. Based on these analyses, data from all mental health symptoms, work pace and workload, decision latitude, autonomy, and social support by the manager were selected for the multivariate analyses of RTW-SE at baseline.

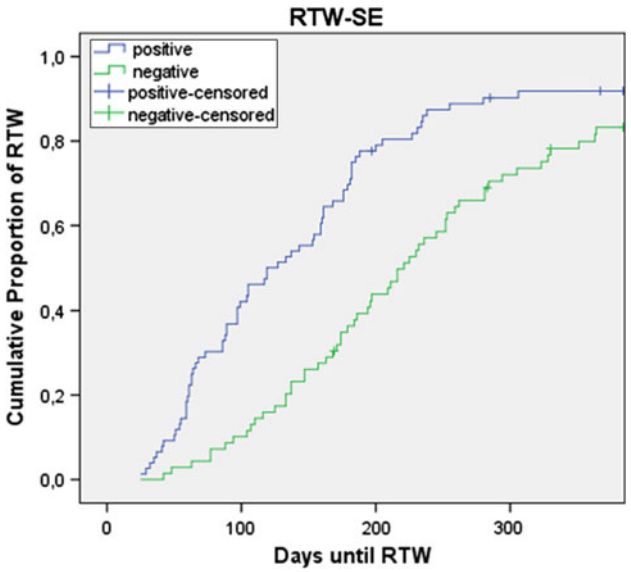

Fig. 1 Cumulative probability of time to full return to work lasting at least 28 days. Time to full return to work (RTW) for workers with positive (n = 76) and negative RTW Self-efficacy (n = 69)

The multivariate regression analyses with RTW-SE as the dependent variable are also presented in Table 2. The first model comprised all selected mental health symptoms. Fatigue and depressive symptoms were the two significant explanatory variables. The potential explanatory variables not selected in the univariate analyses did not show a statistically significant ($P < 0.20$) relationship with RTW-SE in the presence of other variables in the model and thus were not entered in the final model 1. Gender and education were not added to model 1 as control variables as they did not show a statistically significant relationship with mental health symptoms.

In the second model, the selected work characteristics were added to the mental health symptoms, i.e., fatigue and depressive symptoms. Work pace and workload were the only statistically significant explanatory work characteristics in this model, while fatigue and depressive symptoms remained statistically significant. Educational level was added as a control variable because it showed a statistically significant relationship with both RTW-SE and work characteristics.

In the third model, the following interaction terms were added to the model: fatigue times work pace and workload and depressive symptoms times work pace and workload. Both interaction terms were not statistically significant at the $P < 0.05$ level. The final model therefore is model 2, and excludes the interaction terms.

Determinants of RTW-SE Over Time

For the analyses of change in mental health symptoms and RTW-SE over time, both fatigue and depression were

Table 2 Results of cross-sectional univariate and multivariate linear regression analyses with RTW Self-efficacy as the dependent variable

Predictor	Univariate analyses			Multivariate analyses					
				Model 1[b]			Model 2[c]		
	B	95 % CI for B	*P* value	B	95 % CI for B	*P* value	B	95 % CI for B	*P* value
Mental health symptoms									
Fatigue[a]	−0.05	(−0.06 to −0.03)	<0.00	−0.03	(−0.05 to −0.01)	0.001	−0.04	(−0.06 to −0.02)	<0.00
Distress[a]	−0.07	(−0.09 to −0.05)	<0.00	−0.01	(−0.04 to 0.03)	0.74	−0.01	(−0.04 to 0.03)	0.64
Depression[a]	−0.13	(−0.17 to −0.09)	<0.00	−0.07	(−0.13 to −0.01)	0.04	−0.07	(−0.13 to −0.01)	0.03
Anxiety[a]	−0.11	(−0.16 to −0.06)	<0.00	−0.02	(−0.08 to 0.04)	0.48	−0.02	(−0.07 to 0.04)	0.59
Work characteristics									
Work pace and workload[a]	−0.02	(−0.03 to −0.01)	<0.00				−0.01	(−0.02 to −0.00)	0.02
Emotional strain	−0.01	(−0.02 to 0.01)	0.27						
Decision latitude[a]	−0.01	(−0.02 to 0.00)	0.05				0.01	(−0.03 to 0.07)	0.33
Autonomy[a]	−0.01	(−0.02 to 0.00)	0.18				−0.00	(−0.01 to 0.01)	0.48
Social support colleagues	−0.01	(−0.02 to 0.01)	0.30						
Social support manager[a]	−0.01	(−0.02 to 0.00)	0.15				−0.00	(−0.01 to 0.01)	0.48
Job insecurity	0.00	(−0.01 to 0.01)	0.83						

Higher RTW Self-efficacy scores reflect more positive perceptions; higher scores on mental health symptoms and work characteristics are unfavorable

[a] selected for multivariate analyses

[b] Model 1 was not adjusted for potential confounders (which were educational level and gender)

[c] Model 2 was adjusted for the confounding effect of educational level

selected because of their relationship with RTW-SE at baseline. As seen in Table 3, the RTW-SE level increases over time, while fatigue and depressive symptoms decrease over time. The LMM analyses revealed that time and both fatigue and depression were significant factors in the model ($P < 0.00$). This means that RTW-SE improved over time and that parallel improvements in fatigue and depressive symptoms over time are associated with this improvement.

The moderating effect of work pace and workload on the RTW-SE over time was explored by adding work pace and workload and an interaction term of time x work pace and workload to the model. As seen in Fig. 2a, RTW-SE over time, adjusted for mental health symptoms, showed only a slight increase ($P = 0.26$) for both workers with low and high levels of work pace and workload. This increase was steeper when looking at the crude values of RTW-SE over time (Fig. 2b). The hypothesized relation between unfavorable work characteristics and smaller increases of RTW-SE over time was not found (interaction time x work pace and workload $p = 0.86$). However, workers with higher levels of work pace and workload showed significantly lower levels of RTW-SE at all time points ($P < 0.00$).

We conducted a sensitivity analysis in which we included only RTW-SE data of time points where a full RTW had not yet occurred. This did not change our findings on variations in mental health symptoms and work characteristics in relation to parallel changes in RTW-SE over time.

Discussion

This study showed that, compared to RTW expectation, differences in RTW-SE were more predictive of actual RTW. Exploring RTW-SE at baseline showed that lower levels of fatigue, depression, and work pace and workload were associated with higher RTW-SE levels. The interaction between work pace and workload and mental health symptoms was not statistically significant. This suggests that the association of mental health symptoms with RTW-SE at baseline is not different in workers with more or less favorable work characteristics.

RTW-SE levels increased over time for the group as a whole. Exploring RTW-SE over time revealed that, as hypothesized, decreasing mental health symptoms over time (levels of fatigue and depressive symptoms) were associated with parallel increasing levels of RTW-SE over time. The hypothesis that improvements in mental health would be associated with a smaller increase of RTW-SE

Table 3 Descriptives on RTW Self-efficacy, fatigue and depression over time with *P* values of the LMM analyses

	Baseline	3 months	6 months	*P* value LMM analyses
RTW Self-efficacy				
n	154	134	122	
Mean (SD)	3.2 (1.2)	3.8 (1.2)	4.3 (1.1)	<0.00
Fatigue				
n	156	143	124	
Mean (SD)	41.2 (11.3)	34.0 (12.6)	29.1 (13.2)	<0.00
Depression				
n	156	143	124	
Mean (SD)	9.8 (4.3)	6.8 (4.3)	4.7 (4.3)	<0.00

Higher RTW-SE scores reflect more positive perceptions; higher scores on mental health symptoms are unfavorable

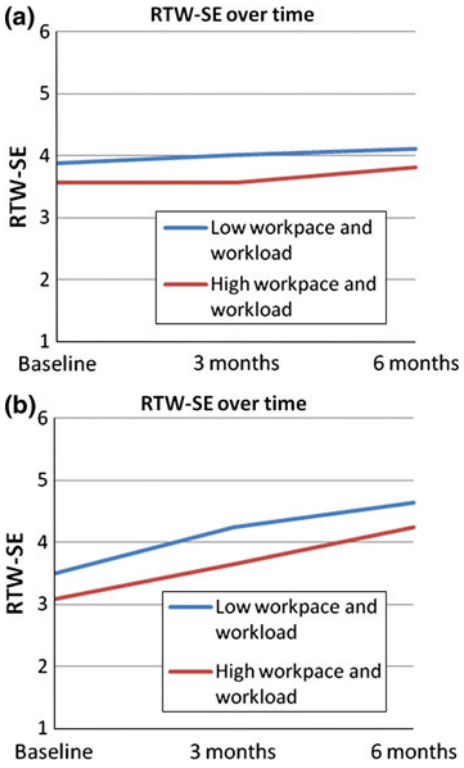

Fig. 2 **a** Estimated means of RTW Self-efficacy (RTW-SE) over time for the groups with low and high levels of work pace and workload, adjusted for mean fatigue and mean depression over time. **b** Mean RTW Self-efficacy (RTW-SE) over time for the groups with low and high levels of work pace and workload, unadjusted

levels in workers with unfavorable work characteristics as opposed to workers with favorable work characteristics could not be confirmed. Nevertheless, workers with higher levels of work pace and workload at baseline did show lower levels of RTW-SE at all three time points.

In previous studies, both RTW expectation and RTW-SE have been found to be predictive of actual RTW. However, we have not identified other studies comparing the predictive value of both constructs. In our study, the RTW-SE scale better predicted actual RTW than the one item on RTW expectation. One possible interpretation of this difference is that the RTW-SE invites responders to better reflect on their RTW-perception, leading to a more accurate prediction of future RTW. However, the difference may also reflect the general advantage of multi-item measures over single-item measures. Single-item measures generally have lower internal consistency and reproducibility than multi-item instruments [32] which can also contribute to a less accurate prediction.

Over the last decade, several studies have explored the role of RTW perceptions in predicting an actual return to work [7, 8, 11, 14, 15]. To our knowledge, this is the first study to longitudinally explore the determinants of RTW perceptions. One study in workers with whiplash disorder explored such determinants cross-sectionally [31]. Severity of symptoms, pain intensity in that study, was also found to be associated with RTW perceptions. Previous longitudinal studies in workers with common mental disorders [7, 14, 15] found that the symptom level at baseline did not fully explain the relationship between RTW perceptions and actual return to work. This led to the suggestion that RTW perceptions influence RTW regardless of the mental health status. However, our findings suggest that RTW perceptions at baseline and over time can at least partly be explained by mental health symptoms and by the perceived work situation. However, this does not mean that RTW perceptions can be disregarded. A post hoc analysis (Cox regression) was conducted to test whether RTW-SE would significantly predict actual RTW when controlled for the improvement of mental health symptoms. We found that when depression or fatigue being below a clinical cut-off within the first 3 months (yes/no) was added to the model of RTW-SE as predictor of RTW, RTW-SE remained a significant predictor (HR 0.5; CI 0.3–0.7 for both models). All in all, our findings provide tentative support for regarding RTW perceptions as a signal of an unfavorable clinical and work situation rather than an overly negative perception that might or should be modified by cognitive-behavioral interventions.

The use of a longitudinal design in exploring the determinants of RTW perceptions is a strength of our study. For the longitudinal analyses, Linear Mixed Models were used instead of a General Linear Model, enabling the use of data from participants who had missing values in one of the observations. We were further able to account for the multilevel structure of our data, as groups of participants were patients of the same occupational physician. Our testing of the multilevel effect in our model revealed that the multilevel effect was negligible.

Our study also has some limitations that deserve consideration. First, our data were gathered in a study comparing two RTW interventions, of which one (care as usual) was found to be more effective in enhancing RTW than the planned intervention [20]. A downside of this design, as opposed to an observational study, is that the intervention may have influenced both symptoms and RTW perceptions. However, in RTW studies with observational designs, workers are also subject to interventions. The advantage of our design is that the interventions were either protocolized (intervention) or recorded (care as usual). Thus, we were able to test whether an interaction of one of the interventions and changes in RTW-SE and mental health was present in our data but did not find such an interaction.

Second, the assessment of work characteristics deserves consideration. We were only able to assess these at baseline, as it is presumably irrelevant to ask workers who are on sick leave to fill out self-report measures about a work situation they have not been exposed to for a long time. As a consequence, work adjustments that were proposed or implemented during the return to work process have not been taken into account. This may have led to more misclassifications of favorable or unfavorable work characteristics. We were unable to determine whether misclassifications may have biased the true relationship of work characteristics and RTW perceptions.

Third, the assessments of mental health, work characteristics, and RTW-SE were based self-reporting. This may have inflated the relationships between these constructs at baseline due to common method bias. Nonetheless, the associations between these constructs were also found in the longitudinal analyses.

Implications for Practice and Research

One recommendation for practice is to systematically assess perceptions of RTW of workers with common mental disorders at the start of sick leave. This information can help identify patients who are at risk for long-term sickness absence. Our study results point to the RTW-SE scale as being more predictive of the actual RTW than RTW expectation. The single item of RTW expectation is easy to administer, with a low burden for the respondent. However, in our study, the RTW-SE scale seems substantially better suited to predict the actual RTW. Moreover, the RTW-SE scale can be used by care providers to obtain concrete information about the nature of the RTW perceptions [16]. This information may direct the reintegration efforts. Future studies should establish optimal cut-off values for the RTW-SE scale with the highest predictive power for the actual RTW in various populations.

Care providers should be wary of regarding low RTW-SE solely as a motivational problem of the individual. Rather, low RTW-SE should be considered during triage. For workers with negative perceptions, a thorough investigation of the barriers for RTW related to the mental health status or related to the work context should follow. Controlled studies should test the effectiveness of this strategy of assessing RTW perceptions, if indicated, followed by a comprehensive assessment of barriers to RTW, and finally an effective RTW intervention targeting these barriers.

In order to also target the RTW perceptions of workers more directly, more insight into the construction of RTW perceptions is needed. Qualitative research may help unravel how RTW expectations are formed and develop over time under the influence of changes in mental health symptoms and contextual factors in- and outside the workplace, and under the influence of a partial return to work. Andersen and colleagues suggest that a qualitative trajectory approach with multiple interviews over time should be used to study changes in thoughts and feelings during the RTW process [33].

Conclusion

We recommend the use of the RTW-SE scale to detect workers with common mental disorders at risk of a late RTW. Work characteristics and changes in mental health symptoms were associated with parallel changes in RTW-SE over time, which points to the relevance of clinical and work factors in how workers perceive their ability to successfully return to work.

Acknowledgments We are grateful to Nan van Geloven for her invaluable advice on the Linear Mixed Models analyses. A grant from the STECR Aladdin programme (R01-8, 1.30) was obtained for this study.

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